

WHAT IS CLAIMED IS:

1. A cryosurgery device for use with an aerosol container having a valve and a valve stem extending outwardly from the valve and the container, the container holding a refrigerant therein, the cryosurgery device comprising:

an actuator adapted to seat on a stem of a container in order to depress the valve stem and release refrigerant from the container, the actuator including an outlet tube for receiving the released refrigerant from the container;

a hub adapted to mount on the container, the hub including at least one opening therein and a first aligning arrangement;

an applicator tube mounted to the hub in fluid communication with the outlet tube of the actuator;

a porous tip mounted to a distal end of the applicator tube for receiving the refrigerant; and

a base having a central opening for receiving the hub and applicator tube therein, the base including at least one key and a second aligning arrangement for cooperating with said first aligning arrangement such that the at least one key can enter the at least one opening in the hub to engage and apply pressure to the actuator to cause the actuator to depress the stem and release the refrigerant.

2. The cryosurgery device according to claim 1, wherein said actuator includes:

an inlet tube connected with the main body and adapted to receive the valve stem therein; and

a main body which connects together said inlet tube and said outlet tube in fluid communication with each other, the main body including:

an arrangement for limiting insertion of the valve stem into the inlet tube, and

an actuating surface against which at least one key engages, such that application of said pressure to the actuating surface causes said actuator to

move such that the shoulder engages and depresses the valve stem to release the refrigerant.

3. The cryosurgery device according to claim 2, wherein said main body includes:

a generally cylindrical side wall,

a bottom wall which closes the side wall and which includes an opening, with the inlet tube and outlet tube being connected to opposite sides of the bottom wall in surrounding relation to the opening therein, and

a ledge connected with an upper edge of the side wall, the ledge defining said actuating surface.

4. The cryosurgery device according to claim 3, wherein said main body further includes reinforcing ribs on an outer surface of the side wall and connected with said ledge.

5. The cryosurgery device according to claim 1, wherein the applicator tube includes an enlarged diameter section at a distal end thereof for receiving the porous tip therein.

6. The cryosurgery device according to claim 1, wherein said hub includes a securing arrangement for releasably securing said applicator tube thereto.

7. The cryosurgery device according to claim 6, wherein:

said applicator tube includes at least one projection extending outwardly from a lower end thereof; and

said securing arrangement includes a threaded securing arrangement for threadedly receiving the at least one projection of the applicator tube in a releasable securing manner.

8. The cryosurgery device according to claim 7, wherein said threaded securing arrangement includes:

an annular boss extending from an upper surface of said hub,  
a tube coaxially positioned within said annular boss and connected with  
said annular boss at a lower end thereof, and  
at least one helical thread on an inner surface of said annular boss for  
receiving said at least one projection in a threaded releasable securing manner.

9. The cryosurgery device according to claim 8, wherein said tube of said  
hub is in axial alignment with said applicator tube and said outlet tube of said  
actuator.

10. The cryosurgery device according to claim 8, wherein said hub includes:  
a cylindrical side wall, and  
a top wall which closes an upper end of said cylindrical side wall, said top  
wall having an opening therein and said annular boss extends from an  
underside of said top wall as said upper surface of said hub in surrounding  
relation to said opening therein.

11. The cryosurgery device according to claim 1, wherein:  
said hub includes:  
a cylindrical side wall, and  
a top wall which closes an upper end of said cylindrical side wall,  
and  
said at least one opening is in said top wall.

12. The cryosurgery device according to claim 11, wherein said hub further  
includes a securing arrangement at a lower end of said cylindrical side wall  
adapted to be snap-fit secured over an upper annular lip of the container.

13. The cryosurgery device according to claim 11, wherein said first aligning  
arrangement includes at least one aligning rib on said cylindrical side wall, and  
the second aligning arrangement includes at least one recess for receiving the  
at least one aligning rib to angularly align the hub with the base.

14. The cryosurgery device according to claim 1, wherein the opening in the base is closed by a lower wall at a lower end thereof.

15. The cryosurgery device according to claim 1, wherein the base includes at least one inwardly extending projection, each having an upper surface on which one said key is mounted, and each said upper surface defining a limit as to an extent to which the hub can be inserted into said base.

16. The cryosurgery device according to claim 1, wherein there are an equal number of said projections, keys of said base, and openings of said hub, said number being at least three.

17. The cryosurgery device according to claim 1, wherein said porous tip comprises a nonwoven material.

18. The cryosurgery device according to claim 1, wherein said porous tip comprises a nonwoven material having polyolefin and polyester components.

19. A cryosurgery device comprising:  
an aerosol container for holding a refrigerant, the container including a valve and a valve stem extending out from the valve and the container;  
an actuator seated on the valve stem in order to depress the valve stem and release the refrigerant from the container, the actuator including an outlet tube for receiving released refrigerant from the container;  
a hub mounted on the container, the hub including at least one opening therein and a first aligning arrangement;  
an applicator tube mounted to the hub in fluid communication with the outlet tube of the actuator;  
a porous tip mounted to a distal end of the applicator tube for receiving the refrigerant; and

a base having a central opening for receiving the hub and applicator tube therein, the base including at least one key and a second aligning arrangement for cooperating with said first aligning arrangement such that the at least one key can enter the at least one opening in the hub to engage and apply pressure to the actuator to cause the actuator to depress the stem and release the refrigerant.

20. The cryosurgery device according to claim 19, wherein said actuator includes:

an inlet tube connected with the main body and adapted to receive the valve stem therein; and

a main body which connects together said inlet tube and said outlet tube in fluid communication with each other, the main body including:

an arrangement for limiting insertion of the valve stem into the inlet tube; and

an actuating surface against which at least one key engages, such that application of said pressure to the actuating surface causes said actuator to move such that the shoulder engages and depresses the valve stem to release the refrigerant.

21. The cryosurgery device according to claim 20, wherein said main body includes:

a generally cylindrical side wall,

a bottom wall which closes the side wall and which includes an opening, with the inlet tube and outlet tube being connected to opposite sides of the bottom wall in surrounding relation to the opening therein, and

a ledge connected with an upper edge of the side wall, the ledge defining said actuating surface.

22. The cryosurgery device according to claim 19, wherein the applicator tube includes an enlarged diameter section at a distal end thereof for receiving the porous tip therein.

23. The cryosurgery device according to claim 19, wherein:  
said applicator tube includes at least one projection extending outwardly from a lower end thereof; and  
said hub includes a threaded securing arrangement for threadedly receiving the at least one projection of the applicator tube in a releasable securing manner.
24. The cryosurgery device according to claim 23, wherein said threaded securing arrangement includes:  
an annular boss extending from an upper surface of said hub,  
a tube coaxially positioned within said annular boss and connected with said annular boss at a lower end thereof, and  
at least one helical thread on an inner surface of said annular boss for receiving said at least one projection in a threaded releasable securing manner.
25. The cryosurgery device according to claim 19, wherein said hub includes:  
a cylindrical side wall,  
a top wall which closes an upper end of said cylindrical side wall, said top wall having an opening therein and said annular boss extends from an underside of said top wall as said upper surface of said hub in surrounding relation to said opening therein.
26. The cryosurgery device according to claim 19, wherein:  
said hub includes:  
a cylindrical side wall, and  
a top wall which closes an upper end of said cylindrical side wall,  
and  
said at least one opening is in said top wall.
27. The cryosurgery device according to claim 26, wherein said container includes an upper annular lip and said hub further includes a securing

arrangement at a lower end of said cylindrical side wall adapted to be snap-fit secured over the upper annular lip of the container.

28. The cryosurgery device according to claim 26, wherein said first aligning arrangement includes at least one aligning rib on said cylindrical side wall, and the second aligning arrangement includes at least one recess for receiving the at least one aligning rib to angularly align the hub with the base.

29. The cryosurgery device according to claim 19, wherein the base includes at least one inwardly extending projection having an upper surface on which one said key is mounted, said upper surface defining a limit as to an extent to which the hub can be inserted into said base.

30. The cryosurgery device according to claim 19, wherein there are an equal number of said keys of said base and said openings in said hub, the number being at least three.

31 The cryosurgery device according to claim 19, wherein said porous tip comprises a nonwoven material having polyolefin and polyester components.

32. A method of treating a skin lesion, comprising:  
positioning the device of claim 19 such that said base is below said container and said porous tip extends downwardly into said central opening of said base;  
applying a force to said container, said base, or both, such that said at least one key enters said at least one opening in the hub to apply pressure to said actuator and cause refrigerant to be released into said applicator tube and porous tip;  
discontinuing said force after said porous tip is saturated with liquid refrigerant;  
removing said base; and

without removing said porous tip from said hub, promptly placing said porous tip in contact with said lesion to cause lesion freezing as refrigerant evaporates.